Massachusetts Department of Public Health
Massachusetts Immunization Program (MIP)

Facts about Varicella (Chickenpox) Disease and Vaccine

SUMMARY OF ISSUES CONCERNING VARICELLA DISEASE AND VACCINE

- Varicella disease is not trivial. Children with a typical case have high fevers, up to 400 skin lesions and are ill for 5 to 7 days.
- Before varicella vaccine was available in the U.S., varicella disease resulted in over 11,000 hospitalizations and about 100 deaths per year.
- Complications of varicella disease include pneumonia, central nervous system involvement, and serious skin infections and death.
- Varicella vaccine is safe, effective, in widespread use, and routinely recommended by all the expert bodies involved with national vaccination policies.
- Non-uniform use of vaccine will create pockets of susceptible individuals at increased risk of acquiring varicella as adults, who are at increased risk of complications.
- Broad varicella immunization coverage is necessary to protect the health of our most vulnerable, high-risk children who must rely on the community to protect them from disease exposure.

I. Varicella Disease

- **In the pre-vaccine era, the Centers for Disease Control and Prevention (CDC) estimate that about 4 million cases of varicella occurred every year in the U.S. resulting in:**
  - over 11,000 hospitalizations/year (approximately two-thirds in children),
  - about 100 deaths/year (almost half in children), and
  - up to 25-40 cases of congenital varicella syndrome/year.

- **Uncomplicated varicella is still a relatively severe disease in children.**
  Many people think of varicella as a benign childhood disease. However, children with a typical case of varicella have:
  - a fever >101^{o} F;
  - between 200 and 400 skin lesions; and
  - illness lasting 5 to 7 days.

- **Complicated varicella infections can result in:**
  - pneumonia,
  - acute cerebellar ataxia,
  - encephalitis, and/or
  - serious skin infections. One of those serious skins infections, group A streptococcal (GAS) infection, appears to be increasing as a complication following varicella disease.

- **Varicella in Massachusetts**
  In the pre-vaccine era, the Massachusetts Immunization Program (MIP) estimates that over 80,000 cases of varicella occurred annually in our state. In addition, there were over 400 hospitalizations and 4 deaths due to the complications of varicella in Massachusetts each year.

- **Varicella has a high mortality in high-risk children.**
  - **When varicella occurs in newborns whose mothers are infected shortly before or after birth, the mortality rate is up to 30%.** These infants will have an increased incidence of shingles at an early age.
  - **Immunocompromised children have a mortality rate of 10-30%.**
    Due to medical advances, the number of children and adults surviving treatment for leukemia, organ and bone marrow transplants and those with other conditions that weaken the immune system is growing. In addition, many children with asthma are now commonly treated with steroids that weaken the immune system. There are several thousand children in these high-risk groups in Massachusetts.

II. Varicella Vaccine

- **Varicella vaccine is well accepted and widely used.**
  - Varicella vaccine is recommended as part of the routine childhood schedule by the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP).
  - In order to ensure broad-based, community-wide protection, the ACIP recommends that all states **require** varicella immunization for susceptible children in the child care and school settings.
  - In Massachusetts, the state chapters of both the AAP and the AAFP endorse the school and child care immunization requirements.
  - Currently, 27 states have varicella vaccination mandates in place.
  - Since it was licensed in 1995, over 25 million doses of varicella vaccine have been distributed nationwide, with over 640,000 doses distributed in Massachusetts. The MIP estimates that over 80% of one-year-olds have been vaccinated and many older children and adolescents have also received the vaccine.
  - Varicella vaccine is safe, with very few side effects reported and most are minor. Pain at the injection site is the most common, occurring in about 20% of recipients. A very mild rash might occur in up to 5% of recipients with an average of 5 skin lesions. Fever has been reported in up to 15% vaccine recipients. Other side effects such as ataxia, anaphylaxis and bleeding are extremely rare.

- **Varicella vaccine is very effective.**
  - Studies show that about 80-90% of varicella vaccine recipients are protected from acquiring any varicella disease at all. About 10-15% of vaccine recipients will acquire a very mild form of varicella, with few symptoms and less than 50 skin lesions, called "breakthrough" disease. Only about 5% of vaccine recipients will develop severe "natural-type"disease.
  - New studies have shown that varicella vaccine (like measles vaccine) is effective in preventing or decreasing the severity of varicella infection if given within 3 days (and possibly up to 5 days) after exposure to someone with varicella.

- **Varicella vaccine provides long-term protection.**
  - Studies done in the United States show duration of protection from the vaccine for up to 10 years, with studies in Japan showing protection up to 20 years.
  - There is no evidence that protection decreases with time since vaccination. Only 2-3% of vaccine recipients develops "breakthrough" varicella per year, regardless of the number of years elapsed since vaccination.
  - Varicella is a live viral vaccine. Data from the widely used live viral vaccines like measles, mumps, rubella (MMR) vaccine indicate life-long protection after one dose.

- **Varicella vaccine protects against shingles.**
  Studies show a 3 to 4 times lower incidence of shingles in those who have been vaccinated, compared to those who have natural varicella infection. In addition, "booster" shots of varicella vaccine may protect adults from shingles.

- **Varicella vaccine use must be broad-based and community-wide because: Variable use of the vaccine will increase varicella incidence in older age groups.**
  As varicella vaccine is more widely used, the incidence of natural infection will decrease. Unvaccinated individuals will have less of a chance of acquiring disease in early childhood. This will result in cases occurring in adolescents and adults who have more severe complications.

Unfortunate Recent Experience with Non-Uniform Vaccine Coverage in Massachusetts

Our state recently experienced the unfortunate effects of non-uniform coverage with rubella vaccine. In Massachusetts, routine vaccination of children against rubella began in 1969; but it was not required for school entry until 1979. In 1993-1994, an outbreak of rubella occurred in our state with 131 cases and one case of congenital rubella syndrome (this was the first case reported since 1979). Almost 90% of the cases occurred in unvaccinated young adults. Many of them had gone to school in Massachusetts but had never been vaccinated.

- **We need to protect high-risk children who CANNOT be immunized.**
  - In order to be protected, these vulnerable individuals must rely on those around them to protect them from disease exposure by community-wide vaccination. Broad-based coverage with varicella vaccine is needed.
  - The ACIP urges all states to ensure community-wide varicella protection via the public health safety net provided by day care and school varicella immunization requirements.

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